

Abstract Submitted
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Helium ELMy H-modes in Alcator C-Mod in Support of ITER Helium Operating Phases¹ C.E. KESSEL, PPPL, S.M. WOLFE, M.A. CHILENSKI, J.W. HUGHES, Y. LIN, PSFC-MIT, M.L. REINKE, ORNL-PPPL, S.J. WUKITCH, PSFC-MIT, C-MOD TEAM — ITER will operate helium majority plasmas in its earlier phases to shakedown the facility and provide plasmas in both L-mode and H-mode for commissioning and preparation for DT burning plasma operation. Part of this activity is to produce ELMy H-modes to test ELM mitigation schemes and observe the ELM impacts on the plasma facing components. It is of interest to characterize helium ELMy H-modes on present experiments to provide some basis to project to ITER and anticipate the plasma performance and ability to obtain H-modes with sufficient performance. ELMy H-mode is accessed in C-Mod by using LSN with an elongation of about 1.55, and with high lower triangularity and low upper triangularity. These regimes were produced with 1.5-4.0 MW of ICRF heating, and with H-mode line average densities of $2.0\text{-}3.2 \times 10^{20} / \text{m}^3$, producing higher frequency repetitive to large infrequent ELMs, respectively. The infrequent ELM regime showed a cross between EDA and ELMy H-mode, with the EDA signature of a quasi-coherent mode at about 200 kHz. Tungsten laser blow-off was done. The pedestal features, energy confinement, ELM character, L-H threshold (1.7-2.5 MW) and W confinement will be discussed. Comparisons with deuterium ELMy H-modes will be made.

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